

Thilini Wijesiriwardene







Ph.D. Candidate, College of Engineering and Computing, University of South Carolina

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SUMMARY

I hold a Ph.D. Computer Science and Engineering, specializing in Natural Language Processing and Large Language Models, with over five years of experience. My research focuses on analogical reasoning and concept abstraction. I have authored several peer-reviewed publications in the fields of neurosymbolic AI, language understanding, and biomedical prediction. Proficient in Python, PyTorch, Huggingface, and other key NLP frameworks, I have led multidisciplinary AI initiatives to develop scalable solutions in healthcare and education, while mentoring junior researchers and communicating insights to diverse stakeholders across domains.

WORK EXPERIENCE



- **Artificial Intelligence Institute, University of South Carolina**  08/2019 - Present
Graduate Research Assistant (R.1) South Carolina, USA
- **National Library of Medicine**  05/2021 - 01/2022
Research Intern (R.2) with [Dr. Olivier Bodenreider](#) Maryland, USA
- **Wright State University**  01/2018 - 08/2019
Graduate Research Assistant (R.3) Ohio, USA
- **Wright State University**  09/2017 - 12/2017
Volunteer Researcher (R.3) Ohio, USA
- **University of Colombo School of Computing**  03/2015 - 06/2017
Assistant Lecturer Colombo, Sri Lanka
- **University of Colombo School of Computing**  10/2014 - 03/2015
Graduate Instructor Colombo, Sri Lanka
- **attune Consulting**  02/2014 - 10/2014
Associate SAP Consultant Colombo, Sri Lanka

EDUCATION

- **University of South Carolina** 08/2019 - Fall 2025
Doctor of Philosophy, Computer Science South Carolina, USA
 - **Advisor:** [Dr. Amit Sheth](#).
 - **Relevant Coursework:** Artificial Intelligence, Reinforcement Learning, Natural Language Processing, Big Data Analytics.
 - **Grade Point Average:** 4.0
- **Wright State University** 01/2018 - 08/2019
MS in Computer Science (Transferred to Ph.D.) Ohio, USA
 - **Advisor:** [Dr. Amit Sheth](#).
 - **Relevant Coursework:** Algorithm Design and Analysis, Deep Learning, Information Retrieval.
 - **Grade Point Average:** 3.89
- **University of Colombo School of Computing** 08/2009 - 02/2014
Bachelor of Science in Information and Communication Technology Colombo, Sri Lanka
 - **Relevant Coursework:** Data Mining, , Research Methods.
 - **Grade Point Average:** 3.61

RESEARCH PROJECTS

R=RESEARCH PROJECT

- [R.1] **Analogy and Abstraction in the Era of Large Language Models**  | **Publications:** C.1, C.2, C.3, J.1, W.2
 - Spearheaded a research initiative on Large Language Models, directing a team of junior researchers to investigate analogical reasoning and abstraction with external knowledge, driving innovative insights and project success.
 - Orchestrated the development and publication of multiple high-impact datasets and methods (See C.3 and C.1), leading collaborative efforts of several junior and senior researchers to advance research in the field.
- [R.2] **Vocabulary Alignment in UMLS Metathesaurus** | **Publications:** C.5, W.1, PP.1
 - Led the development and training of a BERT-based language model for synonymy prediction in the UMLS Metathesaurus, utilizing Python and PyTorch to achieve over 90% accuracy, enabling precise biomedical vocabulary alignment for healthcare applications.
 - Directed the design and evaluation of scalable machine learning models for vocabulary alignment in the UMLS Metathesaurus, collaborating with cross-functional teams to build robust data pipelines and feature engineering workflows, advancing interoperability in medical informatics.
- [R.3] **Context-Aware Harassment Detection on Social Media**  | **Publication:** C.6
 - Led a research initiative to develop NLP models for contextual analysis of online interactions, leveraging Python and TensorFlow to identify and mitigate toxic content in social media, enhancing decision-support capabilities for user-centric AI applications.
 - Orchestrated the creation of a novel dataset of tweets paired with contextual metadata, collaborating with cross-functional teams to design scalable data pipelines and feature engineering workflows, advancing NLP research with potential applications in sentiment analysis for healthcare communication.

PUBLICATIONS

C=CONFERENCE, J=JOURNAL, W=WORKSHOPS, *=SHARED AUTHORSHIP

- [C.1] Thilini Wijesiriwardene, Ruwan Wickramarachchi, Sreeram Reddy Vennam, Vinija Jain, Aman Chadha, Amitava Das, Ponnurangam Kumaraguru and Amit Sheth. **"KnowledgePrompts: Exploring the Abilities of Large Language Models to Solve Proportional Analogies via Knowledge-Enhanced Prompting."** In Proceedings of the 31st International Conference on Computational Linguistics (COLING) 2025. [🔗](#)
- [C.2] Thilini Wijesiriwardene, Ruwan Wickramarachchi, Aishwarya Naresh Reganti, Vinija Jain, Aman Chadha, Amit Sheth and Amitava Das. **"On the relationship between sentence analogy identification and sentence structure encoding in large language models."** In Findings of the Association for Computational Linguistics: EACL 2024. [🔗](#)
- [J.1] Thilini Wijesiriwardene, Amit Sheth, Valerie L. Shalin and Amitava Das. **"Why Do We Need Neurosymbolic AI to Model Pragmatic Analogies?."** In IEEE Intelligent Systems 2023. [🔗](#)
- [C.3] Thilini Wijesiriwardene, Ruwan Wickramarachchi, Bimal Gajera, Shreeyash Gowaikar, Chandan Gupta, Aman Chadha, Aishwarya Naresh Reganti, Amit Sheth, and Amitava Das. **"ANALOGICAL - A Novel Benchmark for Long Text Analogy Evaluation in Large Language Models."** In Findings of the Association for Computational Linguistics: ACL 2023. [🔗](#)
- [C.4] Riccardo Tommasini, Filip Ilievski, and Thilini Wijesiriwardene. **"IMKG: The internet meme knowledge graph."** In The Semantic Web: 20th International Conference, ESWC 2023. [🔗](#)
- [W.1] Goonmeet Bajaj, Vinh Nguyen, Thilini Wijesiriwardene, Hong Yung Yip, Vishesh Javangula, Amit Sheth, Srinivasan Parthasarathy, and Olivier Bodenreider. **"Evaluating Biomedical Word Embeddings for Vocabulary Alignment at Scale in the UMLS Metathesaurus Using Siamese Networks."** In Proceedings of the Third Workshop on Insights from Negative Results in NLP 2022. [🔗](#)
- [C.5] Vinh Nguyen, Hong Yung Yip, Goonmeet Bajaj, Thilini Wijesiriwardene, Vishesh Javangula, Srinivasan Parthasarathy, Amit Sheth, and Olivier Bodenreider. **"Context-enriched learning models for aligning biomedical vocabularies at scale in the UMLS Metathesaurus."** In Proceedings of the ACM Web Conference 2022 (WWW '22). Association for Computing Machinery. [🔗](#)
- [W.2] Thilini Wijesiriwardene, Ruwan Wickramarachchi, Valerie L Shalin, Amit P Sheth. **"Towards efficient scoring of student-generated long-form analogies in STEM."** Workshop on Analogies: from Theory to Applications at ICCBR 2022. [🔗](#)
- [C.6] Thilini Wijesiriwardene*, Hale Inan*, Ugur Kursuncu, Manas Gaur, Valerie L Shalin, Krishnaprasad Thirunarayan, Amit Sheth, and I Budak Arpinar. **"Alone: A dataset for toxic behavior among adolescents on twitter."** In Social Informatics: 12th International Conference, SocInfo 2020. [🔗](#)

OTHER ARTICLES

PP=PREPRINT

- [PP.1] Thilini Wijesiriwardene, Vinh Nguyen, Goonmeet Bajaj, Hong Yung Yip, Vishesh Javangula, Yuqing Mao, Kin Wah Fung, Srinivasan Parthasarathy, Amit P Sheth, and Olivier Bodenreider. **"Ubert: A novel language model for synonymy prediction at scale in the umls metathesaurus."** arXiv preprint arXiv:2204.12716 (2022). [🔗](#)

SKILLS

- **Programming Languages:** Python, C, Java, R, SQL, Prolog.
- **Frameworks and Libraries:** PyTorch, Scikit-learn, Pandas, Numpy, Matplotlib, Huggingface, Langchain.
- **Software & Tools:** GitHub, Anaconda, MS Office, MATLAB, Protege, Neo4j.

TRAVEL GRANTS & OTHER AWARDS

- Student Volunteer: The 31st International Conference on Computational Linguistics 2025, Abu Dhabi, UAE
- Student Volunteer: The 62nd Annual Meeting of the Association for Computational Linguistics 2023, Toronto, Canada [🌐](#)
- Student Scholarship: The 37th AAAI Conference on Artificial Intelligence 2023, Wasginton DC, USA [🌐](#)
- CRA-WP Grad Cohort Workshop for Women 2022, New Orleans, Louisiana, USA [🌐](#)
- Grace Hopper Celebration 2020, Virtual [🌐](#)
- Travel Award: WSTNET Web Science Summer School 2018, Hannover, Germany [🌐](#)
- Travel Award: Tri-State Celebration of Women in Computing (TRiWiC) 2018, Cincinnati, OH, USA [🌐](#)

ACADEMIC SERVICE

R=REVIEWER, AC=AREA CHAIR, PC=PROGRAM COMMITTEE MEMBER

- [R] ACL Rolling Review 2024 (April, June, August, October, December),
Empirical Methods in Natural Language Processing (EMNLP) 2023,
ACM SIGCHI Conference on Computer-Supported Cooperative Work & Social Computing (CSCW) 2022,
ACM Transactions on Computing for Healthcare 2024.
- [AC] ACL Rolling Review (2025 February).
- [PCM] Extended Semantic Web Conference (ESWC) - Resource Track 2025.